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The Chameleon Concept:

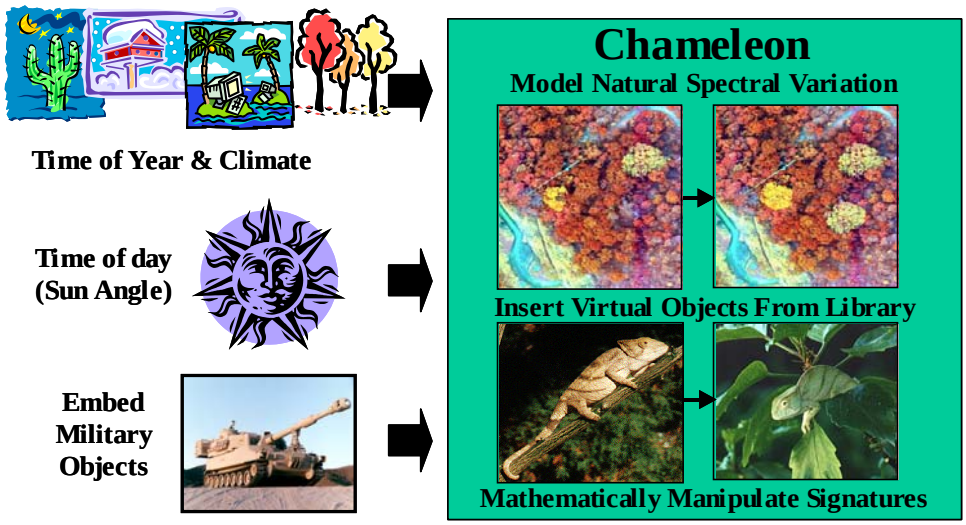
Hyperspectral Terrain and Target Modeling

Purpose

Chameleon produces realistic, empirically based synthetic terrain for use in a variety M&S applications. Conceptually, the landscape becomes a hyperspectral and thermal chameleon-- able to change color based on seasonal variations in vegetation cover, modifications to surficial geologic materials and sun angle, or as required by developmental and operational testing, distributed simulation, or training requirements.

Technology

The latest generation of smart weapons, sensors, tracking and position models, as well as battlefield simulation and training applications require an analytical software system for processing high spectral resolution terrain and target information. Chameleon extends current capabilities of COTS software by using hyperspectral images as foundation data and providing advanced toolsets for terrain customization. Users can embed red and blue forces; add cover, concealment, and obscurants; and model atmosphere, weather, and time of day; to evaluate the ability of friendly assets to detect, acquire, and identify enemy threats and decoys against temporally adjusted terrain models. Changes to landscape reflectance, usually based on laboratory, field, and imaging spectrometer data (accessed from spectral and hyperchip libraries), can be implemented at the supra-pixel (neighborhood), pixel, and subpixel levels.



Status

Chameleon software reached Initial Operating Capability (IOC1) in FY05. It's documented with a User's Guide, a Concept of Operations (CONOPS), and a Software Design Document. Basic research results are available as an Oregon State University dissertation. In addition, the Developmental Test Command selected Chameleon as the United States case study for Verification, Validation, and Accreditation (VV&A) for the International Test Operations Procedure (ITOP) in both FY04 and FY05.

Point of Contact

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